

TCI/HS3 2014 16 Oct Flight Report: WB-57 Gonzalo Flight

Flight Scientists:

Shift 1 (1000-1800Z): Eric Hendricks, Anthony Didlake, Jim Doyle

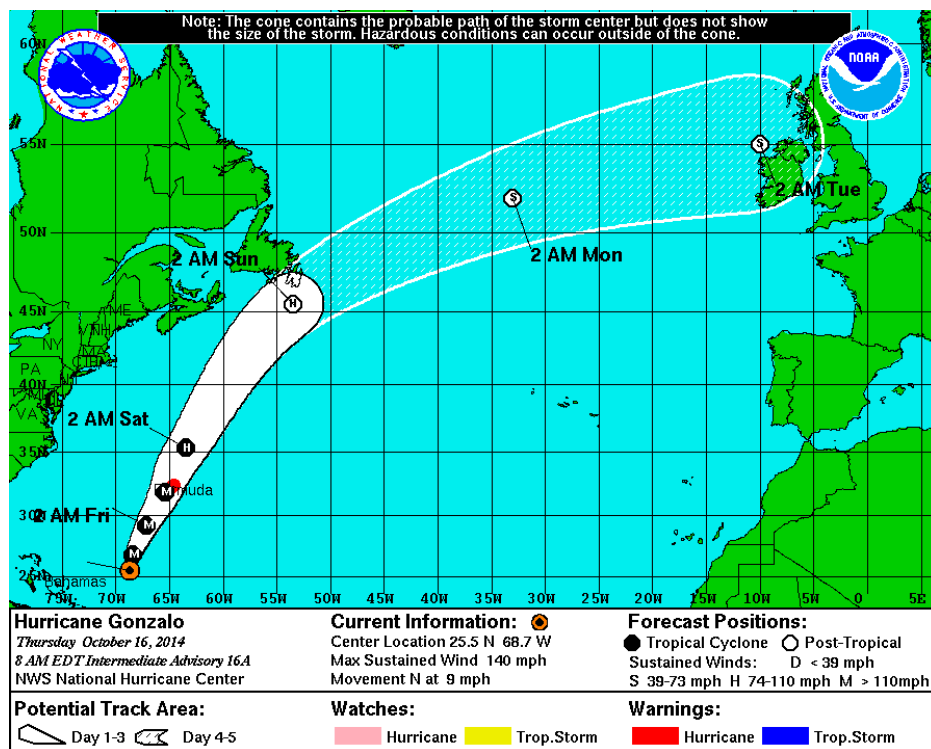
Shift 2 (1700-0100Z): Amber Emory, Stephen Guimond, Pete Black

Pete Black and Gerry Heymsfield on site at MacDill

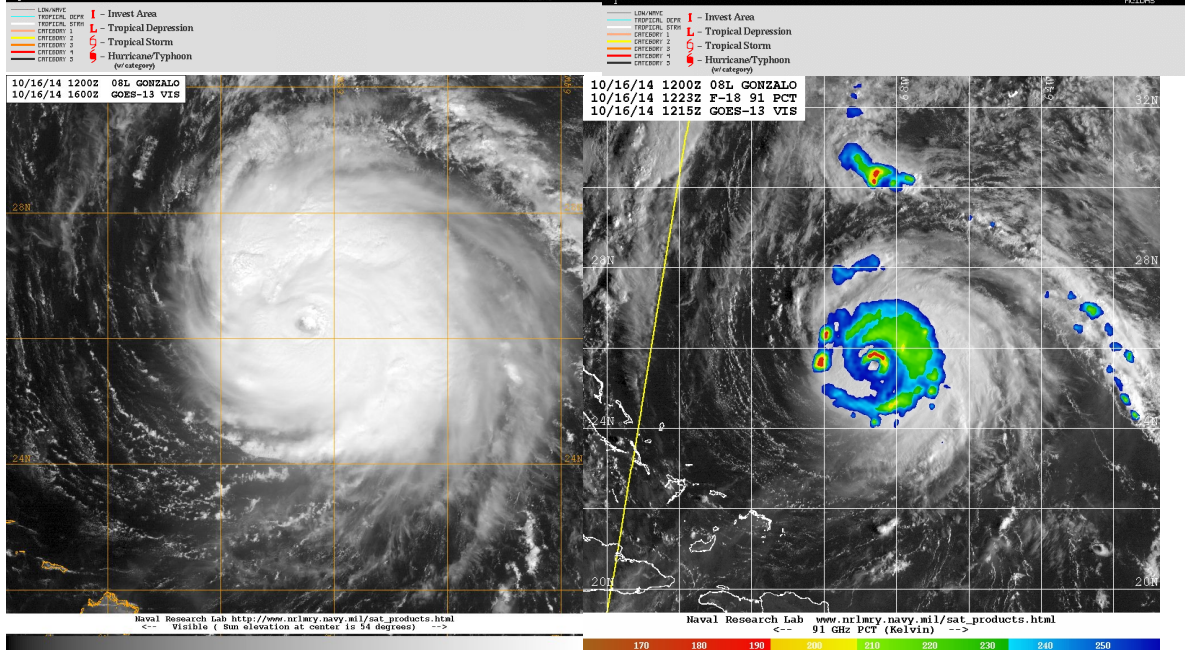
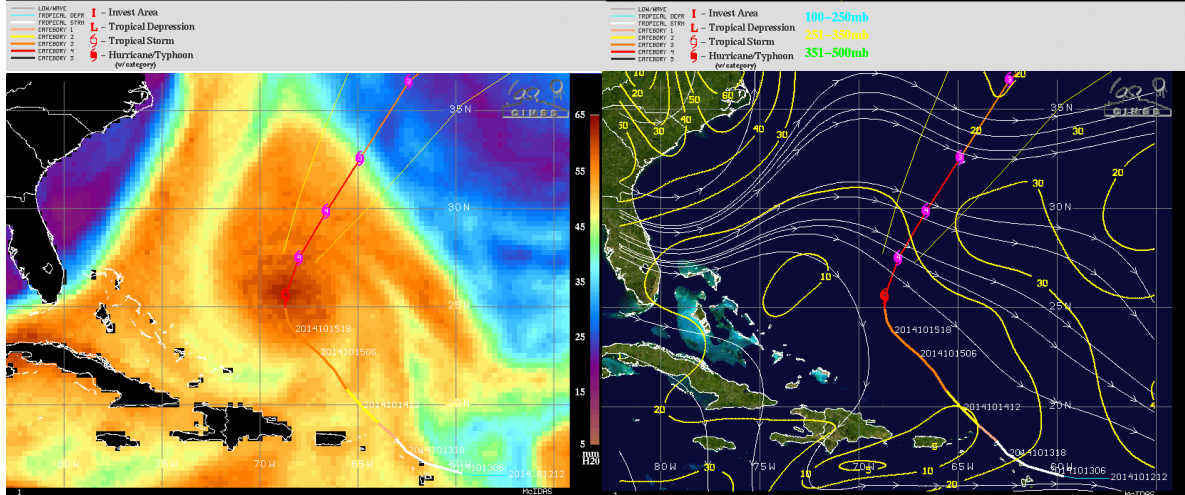
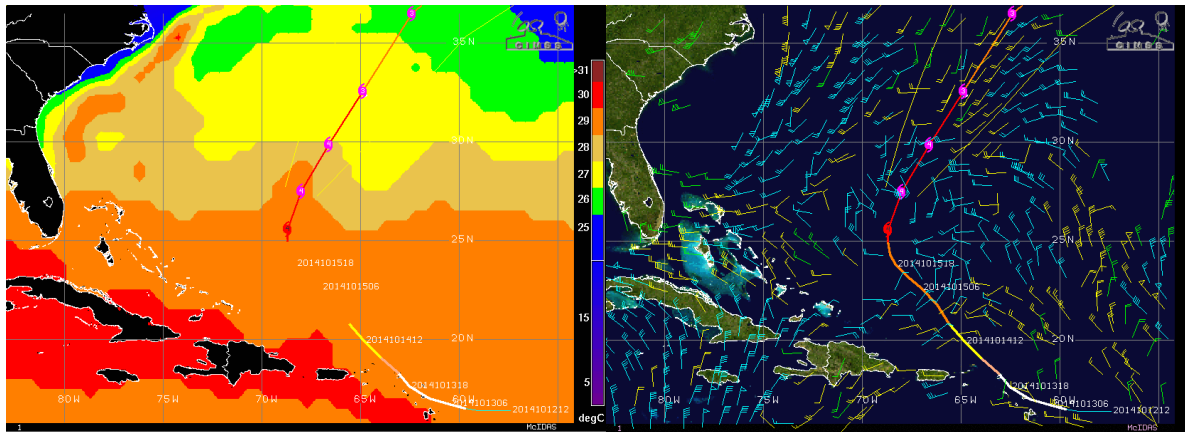
Takeoff: 1516Z

Landing: 2050Z

Mission goal: 6 hr science flight to investigate Hurricane Gonzalo while at peak intensity. Investigate projected outflow jets on NW and NE portion of storm using HDSS. Perform inner-core passes to get eyewall/rainband structure with HIWRAP/HIRAD.



Gonzalo is currently over very warm SSTs (29C). Evidence of some outflow to the north of the TC. Outflow jets are predicted to form on the NW and NE quadrants, and link with upper level trough. TPW values are high, and no significant dry air expected to entrain into the storm. Deep layer shear is also moderate (between 10-20 kt). Stronger shear is not expected to influence storm until tomorrow.

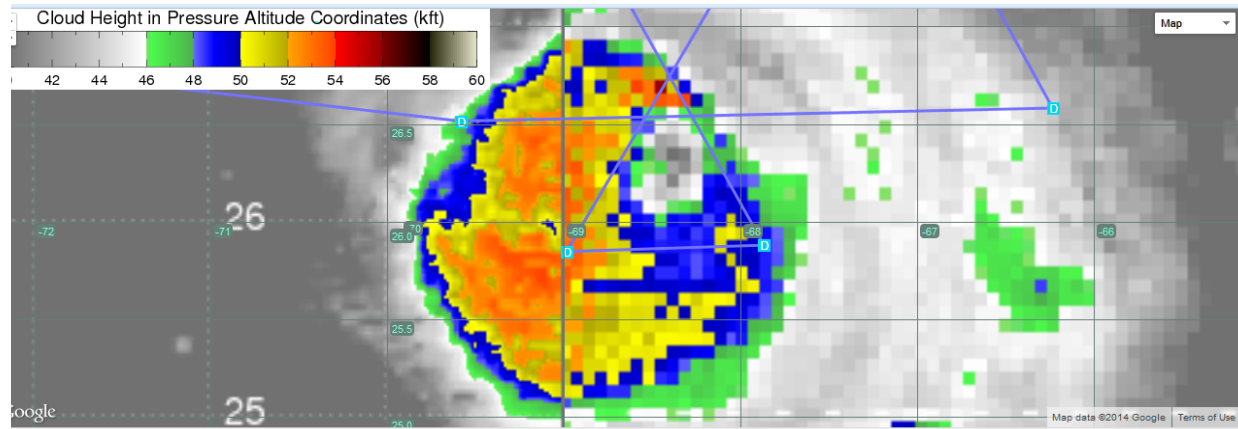


1606Z Decision to move the first leg 10 nm south, as northward storm motion slowed.

1633Z ASDI tracking lost.

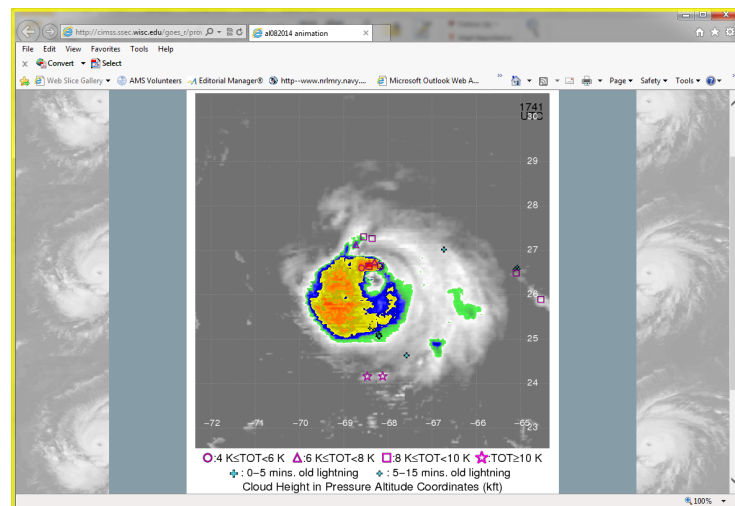
1646Z All XDDs turned on and functioning

Cloud heights 52 kft, some isolated cells in the 54 kft range.



1754Z Per Gerry Heymsfield, HIWRAP had failure just after turn in Leg B, the SE to NW leg over the outflow. Possibly due to the steep bank angles of the WB 30 to 35 degrees compared to 15 degrees for the GH. It is back up again. Short term failure, and was after eyewall pass.

Another CIMMS Tropical overshooting tops image showing lots of localized convective bursts over northern eyewall.



1823Z Start SW-NE leg

1900Z Lots of sat phone com issues. Minor adjustments for center passes were done.

52 Sondes were deployed during the mission.

WB-57 lands at MacDill AFB, ~2050Z

A summary about the mission from Pete Black:

- 52 XDD sondes were launched successfully, approximately 10-12 per leg
- Rapid-fire (every 15 sec) XDD sondes launched across the eye on NW-SE leg and SE-NW leg
- HIRAD and HIWRAP functioned perfectly, except for warning light on HIWRAP during a 35 deg turn which was a bit more than it was designed for. Expectation of good data and that entire eyewall feature would be mapped.
- W-E leg was shifted 10 nm to the south during the transit to Gonzalo to account for slower than expected storm motion
- NE-SW track was shifted to the left by 6 nm and SE-NW track to the left by 6 nm
- Was challenging to determine where aircraft was aircraft was: BFT non-functional and lost Flight Aware feed once out of range of land radar
- Almost impossible to retrieve positions from HDSS GPS due to a combination of internet outages, SATPHONE outages and what all
- Position estimation done mainly by dead-reconning from known turn points and estimated average ground speed, i.e. 7 nm per min.
- Vmax SFMR from NOAA43 at start of flight was 112 kt, max flight level Vmax was 125 kt - which translates to a minimal CAT4 or a maximal CAT3